

FROM: WINSTON & STRAWN LLP

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all previous listings and versions of claims in this application.

1. (currently amended) A method of thinning a wafer made of semiconductor material, the wafer having a first face supporting or for supporting at least one electronic component or circuit and an opposing second face which comprises:

implanting atomic species through the second face and into the wafer to obtain a zone of weakness at a predetermined depth therein, the zone defining a first portion of the wafer extending from the zone to the first face and a remaining portion constituted by the remaining portion of the wafer;

applying a stiffener to the second face of the wafer prior to removing the remaining portion;

removing the remaining portion from the first portion along the zone of weakness to thin the wafer; and

repeating the implanting, and removing steps until the first portion has a reduced thickness that corresponds to a desired thickness for constituting a self-supported thin layer for the electronic component or circuit.

2. (original) The method of claim 1, which further comprises thinning the wafer by a mechanical or chemical thinning method prior to the implanting of the atomic species.

3. (currently amended) The method of claim 1, which further comprises providing at least one electronic component or circuit on the first face of the wafer prior to the implanting of the atomic species, with the thin layer supporting the at least one electronic component.

4. (original) The method of claim 1, wherein the remaining portion of the wafer is removed by applying a heat treatment or an external mechanical stress.

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5. (original) The method of claim 1, wherein the remaining portion of the wafer is removed by blowing a jet of fluid adjacent the zone of weakness.
6. (cancelled)
7. (cancelled)
8. (currently amended) The method of claim [[7]] 1, which further comprises applying the stiffener by deposition.
9. (original) The method of claim 8, wherein the stiffener comprises a layer of silicon oxide.
10. (currently amended) The method of claim [[7]] 1, wherein the stiffener comprises a rigid plate.
11. (original) The method of claim 10, wherein the rigid plate comprises a monocrystalline or polycrystalline silicon material or a glass.
12. (currently amended) The method of claim [[7]] 1, wherein the stiffener comprises a flexible film.
13. (currently amended) The method of claim [[7]] 1, wherein the stiffener comprises an adhesive film.
14. (currently amended) The method of claim [[7]] 1, wherein the stiffener comprises a layer of wax.
15. (cancelled)
16. (original) The method of claim 1, wherein the wafer comprises silicon.

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17. (original) The method of claim 1, wherein the wafer comprises a silicon on insulator wafer.

18. (original) The method of claim 1, wherein the wafer comprises germanium, an alloy of silicon and germanium, silicon carbide, gallium arsenide, indium phosphide, gallium nitride or aluminum nitride.

19. (currently amended) A method of thinning a wafer made of semiconductor material, the wafer having first and second opposing faces, which comprises:
providing at least one electronic component or circuit on the first face of the wafer;

implanting atomic species through the second face and into the wafer to obtain a zone of weakness at a predetermined depth therein, the zone defining a first portion of the wafer extending from the zone to the first face and a remaining portion constituted by the remaining portion of the wafer;

applying a stiffener to the second face of the wafer prior to removing the remaining portion;

removing the remaining portion from the first portion along the zone of weakness to thin the wafer; and

if necessary, repeating the implanting and removing steps until the first portion has a reduced thickness that corresponds to a desired thickness for constituting a self-supported thin layer for the electronic component or circuit.

20. (currently amended) A method of thinning a wafer made of semiconductor material, the wafer having a first face supporting or for supporting at least one electronic component or circuit and an opposing second face which comprises:

implanting atomic species through the second face and into the wafer to obtain a zone of weakness at a predetermined depth therein, the zone defining a first portion of the wafer extending from the zone to the first face and a remaining portion constituted by the remaining portion of the wafer;

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removing the remaining portion ~~as a self-supporting layer having a thickness of less than 35 μ m~~ from the first portion along the zone of weakness to thin the wafer;

applying a stiffener to the second face of the wafer prior to removing the remaining portion; and

repeating the implanting, applying and removing steps until the first portion has a reduced thickness that corresponds to a desired thickness of less than 35 μ m for constituting a further self-supporting [[supported]] thin layer for supporting the electronic component or circuit.